Salmon Reforestation Proposal

Background

The Salmon River Complex burned 14,799 acres of the Salmon River Ranger District on the Klamath National Forest from July 31 through August 30, 2013. The fire burned with mixed severity: 20% unburned/very low severity; 53% low severity; 22% moderate severity; and 5% high severity. The majority of the moderate and high severity burned areas are in the western half of the fire area, within young plantations and shrub/oak stands on south-facing slopes. Elevation varies from 1,440 to 6,240 feet. Terrain includes all aspects and slope is generally steep, ranging from 0% to greater than 70%.

The Salmon/Scott River Ranger District of the Klamath National Forest is proposing the Salmon Reforestation Project to reforest burned stands and protect remaining Late Successional Reserve (LSR) habitat within the project boundary. The Project is located within the Olsen Creek, Whites Gulch, and Little North Fork of the Salmon River Watersheds: Township (T) 40 North (N), Range (R) 11 West (W), Sections 7-10, 15-21, and 30; T41N, R12W, Section 35; T40N, R12W, Sections 10-24 and 27-31, Mount Diablo Meridian; T10N, R8E, Sections 4-6 and 8-9; T11N, R8E, Sections 28 and 32-33, Humboldt Meridian.

Fire Regime and Recent History

Historically, fire processes have influenced vegetative patterns across the Little North Fork/Crapo LSR. Human-caused and small lightning fires have been a source of disturbance throughout the area for thousands of years. Frequent fires occurred at one to 25- year intervals. These fires were primarily low- to moderate-severity surface fires. Occasionally, high-intensity fires occurred within the stands causing small openings. In the early 1900s, fire prevention policy and enforcement intensified, drastically altering the natural fire cycle. Years of fire suppression have increased the amount of understory vegetation and fuels accumulation. As a result, these altered stand conditions are more susceptible to catastrophic fire. Throughout the past four decades, significant wildfire activity has occurred adjacent to and within the Salmon Reforestation Project area. These severe fires include: the Hog Fire (1977), the Yellow and Neilon Fires (1987), the Specimen Fire (1994), the Stein Fire (1999), the Uncles and Hancock Fires (2006) the Cherry Fire (2007), the Jake Fire (2008) and the Salmon Complex (part of the Forks Complex) during the summer of 2013.

Land Management Activities

Active timber management in the area began in the late 1950s. Selective harvesting was the primary tool until the 1960s when clearcutting became the principal harvest method. Existing plantations within the project area were clearcut in the 1960s and 1970s and subsequently planted between the 1970s and 1980s. Both natural and plantation stands within this project have severe fire-related tree mortality.

Late-Successional Forest Habitat

According to the Little North Fork/Crapo LSR Assessment (1995), only 43% of the sites capable of functioning as late-successional/old growth forest habitat are meeting this status. Since this assessment, several stand-replacing fires have occurred within and around the LSR. These high-severity fires resulted in large losses of late-successional forest, including nesting, roosting, and foraging habitat for the northern spotted owl.

Project area analysis

After assessing the Little North fork and Crapo drainages for reforestation needs, we looked at the project area as a landscape, not just through a unit by unit analysis or evaluation. During the initial analysis of the 7,560 acres of plantation within the fire perimeter, we looked at the 1940s photos of the landscape to see what types and where vegetation existed. The photos indicated what aspects and slopes were dominated by brush and hardwoods and which aspects and slopes were dominated by conifers. The 1940 photos showed the condition of the landscape before it was affected by recent large catastrophic fires and salvage logging.

The intent of this project is to increase heterogeneity in fire restoration areas that mimics historic conditions by creating skips and gaps, resulting in a mosaic landscape. A traditional spacing pattern is not the intent of these treatments; rather the intent is to use cluster planting to emulate the heterogeneity of a naturally-occurring forest, while allowing space for natural regeneration where a conifer seed source exists. The described treatments will allow the project area to resemble a more natural and randomly-distributed landscape. Deference will be given to hardwoods and brush where they historically dominated the sites and no conifer planting is proposed in those areas.

Management Direction

The 1995 Klamath National Forest Land and Resource Management Plan (Forest Plan, as amended) includes Standards and Guidelines from the Northwest Forest Plan. The Forest Plan provides forest-wide and management area (MA) direction for project-level projects, as shown in Table 1 below.

Table 1: Management Areas within the project area.

Management Area	Pages in Forest Plan*	Acres within Project Area	Percentage of Project area (%)
MA 2-Wilderness	4-70 to 4-75	567	4
MA 5- Special Habitat (Late Successional Reserve)	4-82 to 4-94	3312	22
MA 10- Riparian Reserves (RRs)	4-106 to 4-114	3016	21
MA 13 – Recreational River	4-120 to 4-122	562	4
MA 15- Partial Retention Visual Quality Objective (VQO)	4-126 to 4-127	7036	48
MA 17-General Forest	4-131 to 4-132	181	1
Private Lands Within Project Area	N/A	4.7	0.001
** Page numbers from the July 29, 2010 version of the Forest Plan. Accessed online at http://www.fs.usda.gov/main/klamath/landmanagement/planning.*			

The interdisciplinary team designed the project to be consistent with all applicable law, regulation, policy, and direction.

Purpose and Need for Action

The purpose of this project is to promote reforestation and reduce fuel loading on National Forest System lands burned during the Salmon Complex (part of the Forks Complex). These activities will help facilitate establishment of desired conifers in existing plantations and natural stands lost during this fire. Retaining and promoting growth of Late Successional Reserve habitat will require protection and maintenance of the existing stands of late-successional forest, as well as managing young stands for the development of future late-successional habitat. The treatment is needed to facilitate establishment of forest cover and diversity within the burned plantations/natural stands and reduce the amount of hazardous fuels created by fire-related tree mortality. This project will maintain, protect and eventually restore conditions of late-successional and old growth forest ecosystems, which serve as habitat for associated wildlife. Treatments designed to provide these habitat conditions support the objectives for the LSR and Crapo Drainage.

Existing Condition

The existing condition of the project area is a result of a variety of disturbances. The disruption of natural wildfire cycles and past commercial timber harvest in the area has shaped the present landscape. Approximately 30% of the fire acreage burned at medium to high severity (stands where over half the trees were killed) and 1,440 acres of that burn severity were previously conifer stands with an average diameter at breast height of more than ten inches. Without treatment, intensely burned forested areas may be slow to recover or may not recover at all and heavy fuel loading will result from fallen snags. This fuel loading predisposes an area to future higher intensity and severity wildfires that inhibit conifer regeneration. Previous conifer stands will likely remain in early successional conditions (*e.g*. brush fields), eliminating a return to mid- to late-successional mixed conifer forests.

Nesting and Roosting (NR) and Foraging (F) habitats are limited due to ecological type, past harvesting, historic and recent wildfire events. Four known northern spotted owl home ranges within the analysis area (Kl1053, KL1052, KL1043, KL4042) have limited habitat available. Late successional habitat is limited. Recent wildfire events resulted in some stand-replacing fire severity within suitable NR F habitat. It is estimated that 115 acres of nesting and roosting habitat, and 420 acres of foraging habitat were lost due to the fire.

Desired Condition

According to the Forest Plan, the desired condition for Wilderness (Management Area 2) is that:

> Each wilderness looks natural, with human disturbances substantially unnoticeable. Ecological processes, including fire, have shaped the vegetative patterns and condition. Some evidence of human influence consistent with the Wilderness Act may be present due to valid mining claims, livestock grazing, and recreational use.
>
> The trail system throughout the wilderness will provide recreational access. Some trails will keep a primitive condition, receiving light use and requiring a high degree of skill and challenge to negotiate. Other trails will accommodate light to moderate levels of use and will be easily negotiated.

(Forest Plan, pg. 4-70).

For Special Habitat (Late Successional Reserve) Management Areas, the Forest Plan states that: "Conditions of late-successional forest ecosystems are enhanced to serve as habitat for late-successional species. Continuous areas of multi-layered forests with high quality habitat characteristics and attributes are common" (Forest plan, pg. 4-83).

The Forest Plan has an extensive desired condition for Riparian Reserves (RRs):

> The vegetative communities within forest and rangeland RRs contain native and desirable non-native species that are in a good ecological condition. A multi-layered, vegetative canopy is present in forested RRs, the exception being where the soils are shallow or unproductive. In meadow areas, overhanging banks with herbaceous and/or shrubby vegetation provide canopy cover. An overstory of conifers provides shade and thermal cover to the streams and lakes. An intermediate layer of deciduous vegetation provides thermal buffering, nutrient cycling, and bank stability. On the ground a mixture of brush, grass, forbs, sedges, etc. provides for bank stability and integrity, sediment filtering and habitat characteristics necessary to contribute to the viability of riparian- dependent species.
>
> The riparian plant community includes all ages and sizes. Plants are at various stages of their growth. Some of the mature and decadent conifers have broken tops and large pieces of wood have fallen into the streams and lakes. Log jams are distributed along the stream channel. Other conifers nearing decadence will eventually provide woody material to the channel.
>
> Occasional openings in the vegetation are apparent where road crossings, trails, camping, fishing access, or other recreational pursuits occur. The road crossings within riparian areas are stable with vegetated roadsides.
>
> In wet meadow areas without a conifer overstory, the RRs primarily support grass, forbs, and shrub species with willows, alders, and overhanging grasses providing much of the shade to the stream or lake.
>
> The water table is near the meadow surface with the stream often meandering through the meadow. Few signs of gullying are apparent. Domestic livestock use meadows and streamsides, but do not degrade the systems.
>
> The riparian vegetation is diverse and dense enough that it stabilizes the stream banks and adjacent hillslopes, providing an area that catches sediment and contributes large wood to the RRs. Large woody material, rocks and live vegetation are present along stream and lake edges to help provide stability to the riparian areas and complexity (differing habitat opportunities) to the semi-aquatic and aquatic habitats.
>
> Large, deep pools are intermixed with riffles in a beneficial mix for the fish species of primary emphasis in a given stream. The stream maintains itself through normal channel processes with few signs of management improvements.
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> Riparian restoration projects, such as plantings of willows or alders along stream banks, help restore the ecological processes and diversity of the RRs. The quality of wildlife habitat in RRs is stable or improving over time.

> In lakes and streams within forested ecosystems large pieces of wood provide cover, substrate and habitat structure for desired species. Clear, clean water is capable of supporting desired aquatic species.
>
> Stream flows and natural lake levels are adequate to protect semi-aquatic and aquatic habitat and maintain the natural hydrologic processes.
>
> The water quality in streams and lakes meets or exceeds State water quality requirements. Fine sediment from management activities is not adversely affecting stream channels. Macro-invertebrates that represent the desired water quality conditions are present. Fish habitats in perennial waters are in good condition, with stable populations of fish present at various times of the year. Projects that effectively improve habitats for aquatic species and fish stocks at risk have been given high priority.

(Forest Plan, pg. 4-106- 4-107).

For Recreational River Management Areas, the desired condition from the Forest Plan is that: "Rivers and their immediate environments are protected for the benefit and enjoyment of present and future generations. Area is managed for a full range of silvicultural practices" (Forest Plan, pg. 4-120).

For Partial Retention Management Areas, the desired condition is that: "An attractive, forested landscape is provided and is maintained for a sustained yield of wood products in areas capable, available, and suitable for timber production. Forested stands are resilient to wildland fire, insect, disease, and other damage" (Forest Plan, pg. 4-126).

Finally, for General Forest Management Areas the desired condition is that: "A programmed flow of timber is provided, which is sustainable through time. Conifer stocking levels and high growth rates are maintained commensurate with the capability of the site to produce wood fiber. Forested stands are resilient to wildland fire, insect, disease, and other damage" (Forest Plan, pg. 4-131).

Proposed Action

The proposed action was designed to meet the purpose and need for action. The proposed action will treat about 931 acres within the 14,779-acre fire perimeter. Treatment acreages are approximate and may be adjusted and refined following scoping.

The Forest Service is evaluating site-preparation needs on acres proposed for replanting. About 7,560 acres of plantation were within the fire perimeter. Of those 7,560 acres, 2,680 acres were evaluated for replanting due to the vegetation burn severity. Of the 2,680 acres evaluated, only 931 acres (Plantation and Salvage Units) are being proposed for replanting because of their aspect, Land and Resource Management Plan allocation, and site potential. The large reduction in acres resulted from a landscape-level evaluation, rather than a unit-specific perspective.

The proposed treatments include approximately 377 acres of site preparation and planting, approximately 323 acres of planting only (Salmon Salvage Project units), and an additional 231acres of planting only in Inventoried Roadless Areas (without site preparation), for the total of 931 treated acres. The Salmon Salvage Project units are proposed to be planted regardless of the salvage harvest. Site preparation for the 377 acres will reduce fuel loading and prepare the area for planting by a combination of the following: handpiling/windrowing and burning and

slashing. Where applicable, healthy, live conifers would be left on site. Brush and dead and dying trees would be removed to prepare the site for planting.

Tree planting (or reforestation) would be by hand methods, using either bare root or container stock. Within treatment stands, planting would only take place in those areas previously stocked with conifers. Since the terrain is very rocky and contains numerous unplantable sites, reforesting by hand will provide for the desired spatial variability within treatment stands and across the project area.

Tree species used for planting will roughly correspond with historical stand composition, varying by forest type. The exact composition and species planted will be dependent upon seed availability. An average of 130-200 trees per acre is to be planted in a mosaic distribution.

Additional planting survival techniques may be used to increase survival of planted trees. These techniques include, but are not limited to: vexar tubing for browse prevention, shade blocks for improved microsite conditions and hand grubbing (to release for survival).

Project Design Features

Resource specialists on the interdisciplinary team have developed preliminary project design features (PDFs) for this project (Table 2, below). They are put in place as a mechanism to ensure compliance with the National Environmental Policy Act, the Forest Plan, and other applicable laws and regulations. The project design features will be adjusted and may change with the final decision.

Table 2: Project design features categorized by resource.

PDF Title	Description	Applicable Units
Botany-1	Avoid parking equipment and vehicles in weed-infested locations.	Entire Project Area
Botany-2	Equipment will be cleaned of soil, seeds, vegetative matter, and other debris that could contain or hold seeds prior to moving to the project area, after operating within an area with a known site, and after leaving the project area.	Entire Project Area
Botany-3	Wherever seed and/or straw is used to restore areas of ground disturbance, certified weed free seed and straw would be specified in the contract.	Entire Project Area
Botany-4	The Project area will be monitored the 2nd and 3rd years after implementation to determine Project Design Feature effectiveness and to quickly respond to any spreading/newly introduced infestations.	Entire Project Area
Fuels – 1	Treat activity generated fuels through hand piling or windrowing.	All proposed treatments
Fuels – 2	Dead and dying trees will be cut and removed throughout area to create a mosaic of fuel loading. Removal of trees would occur by one or a combination of the following treatments: scattering, piling, burning, or utilization (timber, firewood).	All proposed treatments

Fuels – 3	Fuels reduction will serve as site preparation for planting and or natural regeneration.	All proposed treatments
Fuels – 4	All landing piles and biomass fuels should be utilized in priority of Biomass, Firewood, and Burning (based on feasibility).	All proposed treatments
Fuels – 5	Burn in accordance with an approved burn plan and an approved Smoke Management Plan that includes a Smoke Permit approved by the Siskiyou County Air Pollution Control District. (all units/alternatives).	All proposed treatments
Fuels – 5	Priority for pile preference is as follows: Windrow, and manually created piles.	All proposed treatments
Fuels – 6	Piles shall be created in openings void of natural fuel accumulations that may result in resistance to control with regards to fire.	All proposed treatments
Heritage – 1	Any Historic Properties identified within the project area will be managed in accordance with the guidelines set forth in the *First Amended Regional Programmatic Agreement Among the U.S.D.A. Forest Service, Pacific Southwest Region, California State Historic Preservation Officer, and Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings on the National Forests of the Pacific Southwest Region* (P.A.).	To Be Determined
Heritage – 2	Standard Resource Protection Measures for all Historic Properties located within the Area of Potential Effect (APE) for this undertaking include the physical demarcation of site boundaries and avoidance of all sites during implementation of the undertaking. Utilizing such protection measures will result in "No Effect" to historic properties.	To Be Determined
Heritage – 3	If it is determined during the planning process that Historic Properties located within the APE cannot be avoided during project implementation, and the undertaking as proposed has the potential to effect Historic Properties eligible or potentially eligible for inclusion in the National Register of Historic Places, then the Klamath National Forest will consult with the California Office of Historic Preservation regarding the determination of effect for the proposed undertaking.	To Be Determined
Heritage – 4	All appropriate Native American groups will be consulted regarding the proposed project design elements throughout the planning process prior to project implementation. Such consultation will be conducted pursuant to Section 106 of the National Historic Preservation Act.	To Be Determined
Watershed – 1	Project Riparian Reserves (RRs) are established at 170 foot (height of 1 site-potential tree), 170 foot, and 340 foot slope distance from the edge of seasonal, permanent non-fish-bearing, and fish-bearing streams, respectively, as specified in the North Fork Watershed Analysis (1995, Appendix J 1-2). Riparian Reserves will be measured along the slope from the high watermark up the hillslope.	To Be Determined

Watershed – 2	Operate according to the Forest's Wet Weather Operation Standards (WWOS) (USDA Forest Service 2002).	To Be Determined
Watershed – 3	Erosion control work will be kept current during implementation. Erosion control will be complete prior to shutting down operations due to wet weather or at project completion.	To Be Determined
Watershed - 4	Trees directly rooted into the banks or otherwise and obviously integral to the stability of the channel bank will not be removed.	To Be Determined
Watershed – 5	Proposed activities will maintain post-fire shade conditions within RRs. Site specific exceptions may be made where stream shade reduction will not adversely impact water temperature.	To Be Determined
Watershed – 6	Improvements on the existing road to the project area will not over-steepen the failed road cuts, will minimize sidecasting, and maintain the ditches and cross drains or any outslope of the roadway.	To Be Determined
Watershed – 7	If Proposed Action includes upgrades or improvements to stream crossing they are to be built to Forest Plan standards.	To Be Determined
Watershed – 8	A spill containment kit will be in place where refueling and servicing take place.	To Be Determined
Watershed – 9	Fueling and servicing of vehicles used for proposed activities will be done outside of RRs. No fueling/refueling of mechanical equipment such as chain saws will occur within 100 feet of any flowing watercourse or intermittent drainage. Report spills and initiate appropriate clean-up action in accordance with applicable State and Federal laws, rules and regulations. The forest hazardous materials coordinator's name and phone number shall be available to Forest Service personnel who administer or manage activities utilizing petroleum-powered equipment. In the occurrence of a spill which may affect listed aquatic species, NOAA Fisheries will be notified for emergency consultation.	To Be Determined
Watershed - 10	Where necessary, effective soil cover (mulch, woody debris, rock, vegetation, blankets) will be provided on exposed soil surfaces for both short- and long-term recovery; and disturbed areas will be revegetated.	To Be Determined
Watershed – 11	If available on site, post treatment soil cover will range from 50-80 percent depending on slope steepness and soil texture. If post-harvest soil cover is below recommended levels, slash will be left on site to prevent soil erosion.	To Be Determined
Watershed- 12	Handpile and windrow burning will be used instead of broadcast burning.	To Be Determined
Watershed - 13	<u>Restrictions for handpile and windrow construction</u> *Place in a checkerboard pattern whenever possible (not one pile directly above another). *Handpiles must be small in size, 6 feet or less in diameter.	To Be Determined

	*No handpiles within 15 feet of any perennial or intermittant stream channel. *Between 15 and 30 feet, handpiles may be constructed only if one of the following conditions exist: (1) not granitic soils, (2) slope is <35%, or (3) ground cover >50%. If the condition cannot be met, then slash should be lopped and scattered.	
Watershed – 14	For perennial streams >1 foot width, only handpiles greater than 30 feet from the channel may be burned.	To Be Determined
Watershed – 15	For intermittent and small (<1 foot width) perennial streams, only handpiles greater than 15 feet from the channel may be burned.	To Be Determined
Watershed – 16	Construction of handlines and windrows in RRs closer than 25 feet to a watercourse shall be avoided where practical. Handline construction in riparian vegetation shall be avoided where practical. Handlines will be mitigated (waterbarred and covered with organic material) immediately following prescribed burning, when safe to do so.	To Be Determined
Watershed – 17	When handpiling and windrowing in RRs, at least 90% of the large woody debris will not be consumed, both standing and on the ground.	To Be Determined
Wildlife – 1	A seasonal restriction (Limited Operating Period, or LOP) of **February 1st to September 15** will apply to all treatments that modify habitat within 0.25 miles of a northern spotted owl (NSO) activity center or within unsurveyed nesting/roosting habitat. LOP may be lifted if protocol surveys determine non-nesting within 0.25 miles on the year of action.	All units within 0.25 miles of post-fire nesting roosting habitat.
Wildlife – 2	Noise producing treatments that are above ambient noise levels within 0.25 miles of an occupied NSO activity center or unsurveyed post-fire suitable nesting/roosting habitat will have a seasonal restriction of **February 1st to July 9th**. This LOP can be lifted if protocol surveys determine NSOs are not nesting on year of action.	All units
Wildlife – 3	Surveys will follow regionally approved protocol or as agreed upon by local Level One Team.	All proposed treatments
Wildlife – 4	In order to not treat more that 50% of an occupied NSO home range within any given year. Within occupied or unsurveyed suitable habitat, no more that 50% of the nesting, roosting, or foraging habitat will be burned or mechanically treated in a single year in any one 7th field watershed up to 3,500 acres in size. If the 7th field watershed is greater than 3,500 acres, apply the design criteria at the 8th field watershed scale.	All proposed treatments
Wildlife – 5	No more than 50% of suitable NSO habitat within 0.5 miles of an NSO 0.5 mile core will be underburned in a given year.	Underburn treatments not yet developed for project
Wildlife – 6	When burning in spring, smoke is managed so that light to moderate	Underburn

	dispersed smoke may be present within a canyon or drainage but dissipates or lifts within 24 hours. When spring burning is conducted within 0.25 miles and uphill of a known NSO activity center or within 0.25 miles of unsurveyed nesting/roosting habitat (separated by a topographic feature), smoke is managed as described above, and ignition should be discontinued if heavy, concentrated smoke begins to inundate suitable habitat late in the afternoon.	treatments not yet developed in project
Wildlife – 7	No known bald eagle nest trees, perch trees, or roost trees within winter roosting areas will be removed or destroyed as a result of prescribed fire or fuels reduction treatments.	All proposed treatments if this bald eagle habitat is located.
Wildlife –8	To minimize smoke effects on bald eagles, prescribed burning will not be implemented in or within 0.5 mile of a known or suspected nest territory from **January 1st to August 31st**, or a known or suspected winter roost area from **November 1st to March 31st**. If survey demonstrates that nest sites are not active, no seasonal restrictions are required.	All proposed treatments if located
Wildlife – 9	Actions that create noise above ambient levels within 0.25 miles of active or suspected bald eagle nests, or be implemented within 0.5 mile line- of -sight of such nests, will be seasonally restricted from **January 1st to August 31st**. If surveys demonstrate that bald eagles nest sites are not active, no seasonal restriction required.	All proposed treatments if located
Wildlife – 10	Actions that create noise above ambient levels within 0.25 of an active or suspected bald eagle roost will be seasonally restricted from **November 1st to March 31st**. If surveys demonstrate that roosts are not active, no seasonal restrictions are required.	All proposed treatments if located
Wildlife – 11	In known occupied northern goshawk nest sites and management areas, no burning or use of heavy equipment will be implemented within 0.25 miles of the nest site between **March 1st and August 31st**. If protocol surveys are conducted and the site is found to be unoccupied, proposed actions may proceed.	All proposed treatments
Wildlife – 12	Areas discovered to have Survey and Manage species will be buffered using the appropriate management recommendation for the species.	To Be Determined

Appendix A: Project Map